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ORIGINAL ARTICLES.

Prairie Rattlesnakes: Their Poison and Its Treatment.

BY J. F. BREWER, M.D., MINNEAPOLIS, KAS.

Read at the meeting of the Golden Belt Medical Society, Solomon, Kas., January 7, 1897.

"The R. (*Crotalus*) a genus of serpents of the family *Crotalidas*, distinguished from the rest of the family by a rattle at the end of the tail. The genus is subdivided by many authors according to the scales and shields with which the head is covered in different species. All the species are American and are much dreaded for their deadly venom. Although they seldom assail man, unless molested and the rattle often gives timely warning."—*Chamber's Encyclopedia.*

In the Spring of 1878 I bought a farm in Ottawa county, Kansas, and it proved to be a veritable rattlesnake den. Hundreds of them were killed before we were in a measure rid of them. They would crawl on the door step, sleep in the stable and drink at the spring. Occasionally one more curious than the rest would find his way into the house. One venturesome fellow attacked pussy and her family, probably intending to have a kitten for dinner. When I arrived at the house, being summoned by my wife, the rattlesnake lay at full length, head and nearly half the body swaying in the air, while the cat was on the alert and following all his movements with all the rage that the feline race is noted for. In sympathy for my cat I put an end to the exhibition and lost the opportunity of gaining important information. It may be remarked that the cat showed no signs of the hypnotic influence popularly attributed to the rattlesnake.

The rattlesnake, at all times a sluggish reptile, is probably not more so at one part of its season of activity than another, except as induced by its being engorged with food or proximity to the time of shedding its skin. Hence its greatest activity is in the early Spring before it breaks its Winter's fast, while the period of dormancy coincides with the sloughing of the skin and happens in July or August. I have repeatedly seen these propositions varified. There is another period of increased activity after the snake gets used to its new dress and it becomes less tender. It is popularly believed that a rattle is added to the tail each year or each sloughing of the skin, and so good an authority as Chamber's encyclopedia states that this is a fact. While Steele in his work on zoology affirms that sometimes two or three rattles are formed at one slough and that frequently a rattle is lost by friction, making the number of rattles unreliable as a guide to the age of the rattlesnake. The skin sometimes sloughs piecemeal but often is left so perfect that I have mistaken the skin for the reptile.

As to the social habits of the snake I do not know whether it lives peaceably with its neighbors or not. At a snake den near Delphos, Kas., some years ago my brother and a companion killed large numbers, three or four hundred snakes, principally blue racers with a large sprinkling of garter snakes. Among them were eight large rattlesnakes. I visited the den with him shortly after and witnessed his killing. The den, a large hole in an otherwise solid sand stone was alive with reptiles. I took his cow whip (he was herding cows in the vicinity), and struck among them bringing

down six, among them one rattler. At a snake den near Bennington, Kas., several rattlesnakes were seen, and as all these acted like members of the Happy family, I infer that they do not quarrel with their neighbors.

The virulence of the poison is greater in early Spring than later in the season. My pug dog was bitten by a rattlesnake in April, and died in twenty minutes. J. B., of Oklahoma, was bitten on the hand in April, drank a pint of whisky and started to Kingfisher, three miles, for more, died when one mile on the road. Dogs bitten in April almost invariably die. While those bitten late in the Summer almost as invariably recover.

Nora L., age 5: was bitten on the hand in July. Had but little treatment. The hand swelled and was quite sore, but there was no constitutional disturbance to speak of.

The physiological effects of rattlesnake poison are manifested as local and constitutional. The local effect is manifested chiefly on the blood vessels of the part, complete stasis taking place in the arterioles and capillaries of the part. The local swelling and heat are intense and are in proportion to the virulence of the poison. Red streaks often follow the course of the graft and the swelling spreads from this as from the primary focus of the poison. Large blebs form and tend to spread. Often an erysipelatous inflammation intervenes, and if the sufferer recovers from the systemic effects of the poison he falls a victim to the local. The inflammation in the vicinity of the bite probably never undergoes resolution, but recovers through a process of necrosis and sloughing.

The systemic effect is pronounced. On the heart and circulation it is a powerful depressant. The vaso-dilator apparatus (if such exists) is so stimulated that the capillaries and arterioles suffer greatly in the loss of tone. The heart, deprived of its natural stimulant (the peripheral resistance) flags and the veins become engorged with blood. Stasis may take place in which case the heart flags, flutters and stops in wide diastole. If reaction takes place it will manifest itself within twenty-four hours. The arteries regain their lost tone. The peripheral resistance is increased. The heart has more work to do but its energy is lowered from previous relaxations. I have been unable to determine whether this increased resistance is due to the continued action of the poison or is an effort of the capillaries to free themselves.

The secretions are nearly all lessened. The tongue becomes dry, the bowels constipated, skin flushed and dry. I have failed to note the effect on the excretion of urine. On the nervous system it acts as an excitant. The motor area is highly stimulated. The patient trembles, darts his head suddenly forward, his arms twitch and jerk, his tongue, when protuded is very tremulous, I have never seen convulsions produced. The effect on the sensitive tract is as pronounced as the motor. There are intense and shooting pains in the limbs, in the head, everywhere. Delirium comes on. The eyes are bright and dry. I have not noted the effect upon the pupil. The patient is surrounded by thousands of serpents and begs piteously to be released. The sufferer complains of intense thirst, but if water is offered dashes it from his lips.

A few cases may illustrate the physilogic effects and indicate the treatment.

F. R., age 18 years, was gathering choke cherries: was bitten on the leg by a large rattlesnake, killed it and started for his companion, went ten rods when he became dizzy, called for help and fell senseless. Regained consciousness and called again, was bleeding at the nose, became unconscious again. He bled about a quart. Those who were with him said a gallon. He exhibited most of the physiological effects of the poison. Never became actively delirious. Locally there was an extensive slough that continued several weeks. This case received practically no treatment.

Mary N., of Barnard, Kas., was bitten on her foot in May, 1889. I was called and saw her two hours after she was bitten. Administered two ounces of whiskey every hour as a specific. She grew rapidly worse.

Secretions checked, delirium coming on and hemorrhage at the nose beginning. Pulse and heart actinn sluggish. I perceived that I had a physiological vice that strychnine would correct, so abandoned specific for physiological medicine. This increased the heart action and circulation, and quieted the hitherto restless patient. The tremor ceased but the pain continued. In forty-eight hours systemic effect of the poison had ceased and the organs resumed their respective functions. The sore was serious and at one time I feared the whole leg below the knee would suffer necrosis, but after continuing hot applications and judicious massage for a few days, resolution was resumed except at the site of the wound where there was an extensive slough. She finally made a good recovery.

I believe the epistaxis is due to defibrination of the blood, but in this case observed that the blood coagulated as readily as blood from a healthy subject. This case was damaged by the early treatment.

Guy E., age 7 years: was bitten by a rattlesnake April 7, 1895. He walked forty rods to the house when his aunt ligated the finger so as to exclude it from the circulation and brought him to my office, seven miles, with all haste. Not being fully divested of my superstition concerning the specific action of alcohol in these cases, I administered at once 4 ounces of whisky, took him up to my office and administered 1-40 grain strych. sulph. hypodermically. I then cut out a piece of flesh including the fang marks, down to the bone. Applying my lips I employed suction for fifteen minutes. That I removed considerable poison was evidenced by the fact that my lips swelled enormously insomuch that I was very much disturbed as to my condition.

I gave the father 4 ounces of whisky and ordered a half ounce every two hours. This was at 3 p.m. I was called to see him at midnight and found him gasping for breath, heart action uncertain. He was rational. I administered strych. sulph. and left the hypodermic loaded for another dose in four hours. I saw him the next day, Friday, at noon. He was suffering intense pain, and beginning to exhibit convulsive movements. His tongue becoming dry. Continued the strychnine and left off the whisky, as it was evidently increasing the trouble. The arm was enormously swollen and blebs were appearing on the back of the hand. He took no nourishment except a little milk. The next morning his delirium seemed to have reached its height. His teeth clenched and chattered. Called out wildly for assistance in avoiding reptiles that he believed were attacking him. His mouth and lips were parched, calling for water to be dashed aside as soon as offered him. The sight was piteous. In the evening he was worse and in greater pain. Then from the high arterial tension I reasoned that the pain must be caused by capillary constriction, which would indicate the exhibition of the nitrates. I therefore gave strych-nitrate in as large doses as I believed safe. The effect was magical. In forty minutes he slept quietly and waked in two hours refreshed but still delirious Tongue still dry and some motor disturbance. Blebs had reached the elbow and were spreading. On Sunday he seemed better and began to take some nourishment. The tongue showed a little moisture and at times he acted rational. Continued to improve and Monday morning he was free from fever. The nervous symptoms had subsided. Tougue moist; and as to systemic poison he was convalescent. The swelling from the arm had reached the body where a large bleb had formed. The arm itself was treated with a large poultice of charcoal and bran to which carbolic acid was added. This was made heavy and kept well moistened. I did not see him during the day, Monday, but was informed by the parents that no symptoms of the poison returned. The swelling after reaching the body spread rapidly and he complained of intense pain deep in the lung. He died early Tuesday morning. Probably from edema of the lungs. The inflammation was erysipelatous in character from the beginning, and were I to treat a similar case would envelop the limb in a cranberry poultice. This child would undoubtedly have been saved had I amputated the finger above the ligation.

To summarize:

1. Rattlesnake bite should be treated on physiological principles and the local sore on surgical principles.

2. Nitrate of strychnine is the most complete physiological antidote to rattlesnake poison, with nourishment to maintain the strength of the patient.

3. There is no antidote.

4. From the nature of the poison, a surgeon is not excusable, if called in time, for not excising freely the wounded parts.

5. Treatment is generally founded on popular superstition and does more injury than good.

The Action of Rattlesnake Venom upon the Bactericidal Properties of the Blood.

Dr. W. H. Welch, Johns Hopkins University, reported the results of experiments made by himself and Dr. C. B. Ewing, U. S. Army, to determine the action of rattlesnake venom upon the bactericidal properties of the blood. The venom was obtained directly from a living rattlesnake in a sterilized saucer according to the method recommended by Weir Mitchell. This venom was injected in varying doses subcutaneously into rabbits, which died at intervals varying from one-half to four hours. Immediately after death the blood was withdrawn by means of a sterilized glass pipette from the right auricle and posterior vena cava, about 6 to 10 c.c. being readily obtainable in this way. At the same time blood was obtained for a control experiment from a healthy rabbit. In some instances the blood of the animal before it was poisoned by the venom was previously tested as to its bactericidal power. After standing twenty-four hours in the refrigerator, 1 to 3 c.c. of the venom serum and of the normal serum were pipetted off into sterilized test tubes and inoculated with the bacteria to be tested. The bacillus coli communis and the bacillus anthracis were used for this purpose. Roll or plate cultures in gelatine or in agar were made in the usual way to determine the number of bacteria inoculated into the serum, and at varying intervals of time up to one week, to determine increase or diminution of the bacteria planted in the serum. The experiments showed that the blood serum of rabbits killed with the venom was nearly or entirely devoid of the power of destroying the bacteria used for the experiments, whereas the normal serum was capable in a few hours of destroying thousands of these bacteria.

The bearing of these experiments upon the rapid development of post mortem decomposition following death from snakebites, and also upon individual predisposition to the invasion and multiplication of bacteria in the living body, was considered.

NEW YORK city has followed in the wake of Boston in appointing medical inspectors of public, parochial and private schools for the purpose of reducing the number of cases of contagious diseases. Each child is to be examined daily, and when absent because of sickness, the nature of the sickness will be investigated. The press reports say that many prominent physicians have applied for appointment on the staff. The office of inspector is worth $300 a year. Among the applicants for this position is a professor in one of the medical colleges. The applicants for appointment on the staff are of both sexes, but President Wilson will give preference to the summer corps of physicians. Provision is made for a staff of 150 at $30 a month. The chief inspector will receive $2,500 a year. Competitive examinations will determine who are to have the places. President Wilson recommends that the summer corps be not required to pass examination. He will also recommend that the competitions be by districts, so that the physicans appointed be residents of the districts in which they are to serve.

A MOTHER ten years and two months old with a plump healthy baby is reported by the *American Journal of Surgery and Gynecology* as probably the youngest yet heard from.

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Topeka, Kansas, Saturday, Jan. 30, 1897.

THE following bill has been introduced in the Kansas Legislature and efforts are being made for its passage. It is for the best interest of every physician and every student or prospective student in Kansas.

AN ACT to Promote Medical Science and Repealing Sections 3.758, 3.759 and 3760 of the General Statutes of 1889.

Be it Enacted by the Legislature of the State of Kansas:

Section 1. It shall be lawful for the faculty of any regularly organized medical college in this State, authorized by law to confer the degree of Doctor of Medicine, to claim and receive the body of any person dying in the penitentiary while under sentence of law for crime, in the State insane asylum while an inmate thereof, or while an inmate of any asylum, receptical, hospital, or poor house, and which is required to be buried at the public expense, such body to be used within the State for the purpose of medical and surgical study and the instruction of students.

Sec. 2. The president and secretary of any regularly organized medical college of this State, are hereby authorized and empowered to make formal requisition upon the warden of the State penitentiary, the superintendent, manager, proprietor or custodian of any asylum, receptical, hospital or poor house in this State, for the body of any person who may die therein and is required to be buried at the public expense, for the purpose expressed in section 1 of this act. It shall be the duty of such warden, superintendent, manager, proprietor or custodian upon receiving such requisition to acknowledge the receipt thereof; to enter it in a book to be kept for that purpose, and upon the death of any person coming under the provision of this act, to immediately notify the president or secretary making such requisition, provided that if two or more colleges make requisition, the bodies shall be distributed between them in proportion to their number of students.

Sec. 3. Upon receiving notice of the death of any person coming under the provision of this act, the president or secretary shall immediately authorize some person to receive the body and to transport it to the medical college which they represent. A receipt for the body shall be given to the officer delivering the same, which receipt shall be entered in the book aforesaid; and the president and secretary of such medical college shall keep or cause to be kept, a record by register number of all such bodies received. If the body is not needed the president or secretary shall so inform the proper officer and the body shall be buried.

Sec. 4. Before making requisition upon any person as provided in section 3 of this act, the president and secretary of such medical college shall execute a good and sufficient bond to the State of Kansas in the sum of $ ——, to be approved by the secretary of State and filed in the office, and such bodies shall be used only for the promotion of medical and surgical science and instruction of students within this State.

Sec. 5. If the deceased person, during his last sickness, of his own accord requests to be buried, or if any person claiming to be and satisfying the proper authorities that he is a personal friend or of kindred to the deceased, shall at any time ask to have the body buried, the body shall not be surrendered but buried in the usual manner, provided that no body shall be delivered as provided in section 3 of this act, if claimed by friends within twenty-four hours after death, and provided also, that in case the remains of any person so delivered and received shall be subsequently claimed by any relative or friend they shall be given up to such relative or friend for interment.

Sec. 6. Every person who shall deliver up the body of any deceased person in violation of or contrary to the provision of this act, and any person who shall receive such body knowing the same to have been delivered contrary to any of the provisions of this act, or any person who shall refuse or neglect to comply with the conditions of this act shall each and any of then be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by fine not less than $100 nor more than $200, or imprisonment in the county jail not exceeding one year.

Sec. 7. Sections 3,758, 3,759 and 3,760 of the general statutes of 1889, and all acts and parts of acts in conflict with the provisions of this act are hereby repealed.

Sec. 7. This act shall take effect and be in force from and after its publication in the statute book.

A BILL has been introduced in the Texas Legislature which provides for the creation of an examining board and the examination of all applicants for license to practice in that State. According to this proposed law no applicant will be admitted to the examination who has not received a degree from a regular chartered medical school requiring sufficient preliminary education and attendance upon at least three courses of lectures of not less than six months each and in three different years.

It also provides that after the passage of the act only the following persons and no others shall be permitted to practice:

1. All those who have been legally licensed and whose diplomas or certificates have been recorded by the clerk of the district court of county in which he or she resides prior to this act.

2. All persons who shall hereafter receive certificates from the board of medical examiners of the State as above provided for, and who shall also in all other respects have complied with the provisions of this act.

There are many other less important provisions, but on the whole it may be said to be a very cumbersome bill, and unless they have a very pliable Legislature in Texas very doubtful of passage. We cannot for a moment believe that an examining board appointed more from political preference than medical ability is more capable or more conscientious than the faculty of a reputable medical college who have not only their own individual reputations at stake but also the standing of their college. In their proposed bill they have limited the privileges of an examination to graduates of reputable medical colleges in good standing so that it gives no advantages to undergraduates but sets up a board of censors for every college in the land with the possibility of a system of political corruption which is well nigh impossible under the Illinois or the proposed Kansas law.

DR. WM. H. PANCOAST, of the Philadelphia Medico-Chirurgical College, formerly of Jefferson College, died recently. He was a son of Dr. Joseph Pancoast and one of the best known men in the country.

FEW men at the present day accept the old theory of the heredity of tuberculosis and yet the majority of examiners for insurance companies and insurance fraternities reject applicants who have a family history of tuberculosis.

DR. BOTELER, of Kansas City, has called our attention to a weak point in the bill which was submitted to the last Legislature and his suggestion for correction is of considerable importance. The first section of the bill as it reads is as follows:

"Section 1. That no person shall practice medicine in this State unless such person is of good moral character, and is a graduate of a legally chartered medical institution of good repute, or has been practicing medicine as a means of livelihood in this State prior to the taking effect of this act, and has complied with the laws then in force, regulating the practice of medicine."

Dr. Boteler suggests the insertion of the words "and properly equipped" after the word chartered in the fourth line and the addition of the following to this section:

"The State Board of Health shall have power at any time to investigate and examine into the facilities, requirments and teaching of the medical colleges of this State. Should any medical college be found lacking in its facilities, requirements or resources for properly teaching the science of medicine; the State Board of Health shall have power to enjoin any such institution from further advertising to the public their existence as a college and to refuse to license its graduates to practice medicine."

It is possible under our present system for medical schools of any and all descriptions to become chartered in this State, and as such their diplomas must be recognized without regard to requirements or equipments. We are informed that there are now in the State institutions legally chartered, which propose to grant diplomas to any and all. Power of some kind must be given the Board of Health by which they may discriminate between colleges which are worthy and those which are classed as frauds

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THE Supreme Court of Missouri has decided that anyone, however ignorant he may be, may practice medicine in that State if he only holds a diploma. The State Board of Health has been compelled to issue a certificate to an applicant whom they deemed too ignorant and unsafe to let loose there.

MISCELLANEOUS.

In Memoriam.

Whereas, It has pleased the Almighty to claim the spirit of Harriet M. McClintock, the widow of the late John M. McClintock, M.D., and mother of the eminent and our highly esteemed professor, J. C. McClintock, A.M., M.D., and

Whereas, We, realizing the grief and sorrow of the surviving relatives and the immediate family, and the incapability of words to allay their grief, yet, being desirous of expressing our sincere sympathies in their hour of sorrow: therefore be it

Resolved, That we, the students of the Kansas Medical College, express our sympathy and offer our consolation to Professor J. C. McClintock and family in their bereavement; and be it further

Resolved, That a copy of this resolution be presented to him, and that it be published in the KANSAS MEDICAL JOURNAL.

Committee.

Carditis Interstitialis.

J. Hobart Egbert, A.M., M.D., Ph.D., Holyoke, Mass., in The Philadelphia Polyclinic.

Owing to the lack of accurate information concerning the occurrence and progress of the disease commonly known as acute myocarditis, it is believed that the following report will not only prove of interest, but may shed a ray of light upon the obscure history of this serious malady. As the illustrious Dr. Alonzo Clark was wont to tell his students from year to year, during his memorable connection with the New York College of physicians and surgeons as professor of the principles and practice of medicine, "myocarditis" is tautology, and hence we

prefer to speak of our case as one of acute interstitial or parenchymatous carditis. From the fact that the exact pathological condition of the heart in this case was not demonstrated by post-mortem examination of the organ itself, there may be some who will question the diagnosis—believing the exact determination of intestitial carditis is made only by post mortem examination of the heart itself—but the evidence at hand is convincing to at least one, to wit, the writer.

On the evening of December 31, I was called to see Mr. C., a machinist, age 56. I found him with the other members of his family in the sitting room, occupying an easy chair and trying to give his attention to the evening paper. His only complaint was of a pain in the region of the heart—a pain that had been felt a little that morning but which had grown constantly worse during the day. In quality the pulse was full and vigorous, and its rate 110; the temperature was 102 4° F. There was slight local tenderness in the region of the left breast, and percussion gave slightly increased dullness in this region. There was no heart murmur nor visible external physical sign. 10 grain Dover's powder was prescribed and the patient directed to take a hot foot bath and go to bed. In case the pain did not abate within an hour, a mustard paste was then to be applied.

About 4 o'clock the following morning, the call came to revisit the patient; I found him suffering intense pain in the region of the heart, very restless and disturbed. The rate of the heart's pulsation had not advanced but the quality was altered, the radical pulse being much less full and vigorous than it had been the previous evening. The temperature was 103.5° F. Only slight diaphoresis had been effected by the foot-bath and Dover's powder. A small quantity of high-colored urine had been voided during the night. A hypodermic injection of ¼ grain of morphin sulphate was now given and, as very little relief attended its administration, it was followed in half an hour by another containing the same quantity of morphin, together with 1-50 grain of atropin sulphate. This gave temporary relief. A mixture of tincture of digitalis, spirit of nitrous ether, and solution of ammonium acetate was prescribed.

When the patient was again seen after breakfast, the pain in the region of the heart had returned with force. The percussion dullness over the heart was more pronounced, the heart's sounds more or less muffled, and a distinct friction sound could be heard. A hypodermic injection of morphin was administered, and this failing to give relief a small blister was put over the heart and the patient rested. I now felt certain that the case was one of acute pericarditis, but one evincing peculiarities, and in which pain was a most persistent and distressing feature, and one which progressed with unusual rapidity. There was no history of a predisposing cause. The patient had never been the victim of rheumatic fever, and few men of his age could boast of so few sick days. The only evidence of an exciting influence was one of exposure (witnessed and even participated in by the writer), a few nights previous, to a draft of air which played upon his bald head and shoulders for about an hour during the dedication of a new building belonging to an organization of which he was a member.

Although the pain did not wholly disappear from the region of the heart, the patient rested at intervals throughout the day, but at midnight it was again most severe—as the agonized countenance of the patient and his great restlessness plainly indicated—and before morning there was delirium. The pulse rate at 6 a.m., January 2, was 110 and variable; the temperature, in the axilla, 104.2° F. Morphin was given hypodermically without other appreciable effect than to increase the delirium. Hyoscin hydrobromate (grain 1-100 hypodermically) was administered and had an immediate calming effect. During the preceding twenty-four hours about seven ounces of high colored urine was voided; specific gravity 1020, albumin present. There having been no evacuation of bowels, 5 grains of calomel were administered. This failing to act, was followed in six hours by 30 grains of com-

pound jalap powder. This occasioned two small dejections. By repeating the hyoscin hydrobromate injections the patient was kept somewhat quiet throughout the day, but during the following night the delirium increased and, except when modified by large doses of sedatives, was violent and maniacal. The patient refused to take medicine, called loudly and wildly, and frequently struck at those who approached him. Either one foot or one hand was usually kept constantly in motion—beating time rhythmically—and when this was overcome by pressure of the sedative, it was taken up by the jaws and sound similar to those yielded by the parade drum were maintained by the clash of the teeth. There was frothing at the mouth, the pulse became weak and irregular and that the patient was yielding to septicemia was plainly evident. That I was now dealing with a case of purulent pericarditis was quite obvious, but it was also quite evident that the inflammation extensively involved the cardiac muscle as well.

As the septic products of inflammation and bacterial growths were more widely diffused throughout the body, vitality waned and death occurred about 4 o'clock the following afternoon. Permission to make a post mortem examination was flatly refused; nevertheless, under strict aseptic precautions, a small amount of sero-purulent fluid was, soon after death, obtained from the pericardial sac and subjected to microscopic and biological examination. From it was obtained the *micrococcus lanceolatus* in pure culture, and a rabbit inoculated yielded in twenty-four hours to fatal septicemia. But what to my mind was of most confirmative diagnostic interest, and the fact that in the exudate obtained the microscope revealed the presence of typical cells of cardiac muscle in various stages of degeneration.

The Best Treatment of Scabies.

New York Medical Journal.

The *Province Medicale* contains an abstract of an article from the *France Medicale* in which the author, M. Julien, states that he has treated a great number of women by painting their bodies with the balsam of Peru, which exercises a tonic action on the acarus. The application of this remedy is very simple. No soap and water should be used before its application, for the greasy substances of the body, he says, are very useful in promoting the action of the remedy. With a brush a thin layer of the balsam is laid on the body and then rubbed in gently. The volatile properties of this agent enable it to penetrate the furrows easily, thus rendering it unnecessary to tear them apart; afterward a cleansing bath is given. In order to obtain the best results, M. Julien recommends practicing the painting at night and resort to the bath on the following morning, so that the patients may receive the full benefit of the agreeable exhalation, which resembles that of benzoin; this condition, however, he says, is not indispensable. If the disease is of long duration there will be no inconveniences in prolonging the action of the remedy, as it causes no irritation and is always well borne.

M. Julien states that he has employed the balsam systematically for a period of five years, and that it has shown itself efficacious in all cases, even in those of long standing and in those in which grave relapses have occurred. He thinks that this remedy is clearly indicated in subjects suffering from impetigo, ecthyma, eczema, cardiac troubles, albuminuria, etc., during menstruation, in certain pregnant women, and in all other subjects for whom baths are interdicted. He recommends it also for nurslings.

In a word, he says, it is a simple measure which any patient may easily apply himself, its action is very certain and exact, and it has a pleasant odor which is especially appreciated by patients.

M. Julien says that he does not know of any contraindications to the use of this agent, and, he adds, the same cannot be said of the ointments which contain sulphur, for their most ardent advocates have been forced to acknowledge that there are many contraindications to their employment.

A Word on the Symptoms and Treatment of Pleurisy.

The Therapeutic Gazette.

In the *Northwestern Lancet* of October 1, 1896, Abbott, in discussing the subject of pleurisy and its treatment, says that the salicylates and other anti-rheumatics have been recommended on the theory that pleurisy is rheumatic. While some cases may be rheumatic, others certainly are not, at least one-third being tubercular; and in the writer's experience this class of remedies has failed in a great number of cases to accomplish anything in the way of amelioration or cure, doing no good in promoting the absorption of fluid, and little if any in relieving the other symptoms. Fixation of the chest by plasters in some cases seems to afford relief by preventing motion and the painful rub of inflamed surfaces, but in many patients the irritation caused by the plaster is more complained of than the pleuritic pain, while the presence of the plaster interferes with accurate examination of the patient.

Blisters make a bad matter worse. It is bad enough to suffer the ills that Providence sends, without being tortured by the doctor in addition. As to poultices, they are a delusion and a snare: even if hot when applied, they soon become cold, and the alternation of the hot, slimy nastiness with the cold one cannot do much good, while the interval between the removal of one and the application of the other is fraught with danger to the patient, who is uncovered for the purpose of changing. The same objection applies to the use of poultices in pneumonia. We often hear of wonderful results from these things, but they are more often *post hoc* than *propter hoc.*

If any external application is used, none is so good as cold. An ice-coil or an ice-bag would often alleviate pain and gives great relief. Cold cloths are bad because they make the clothing wet.

Morphine or some form of opiate, of course, will do better than anything for the relief of pain, and should be used freely enough to make patient comfortable. If an effusion comes on rapidly enough to cause dyspnea, stimulants may be needed; and medication should be adapted to symptoms and conditions which demand it.

If an effusion is large, no time should be lost in removing it. The physical signs are sufficient to satisfy us in most cases in regard to this; but, if not, a needle thrust into the cavity will soon settle the diagnosis. In nearly all cases where there is an effusion there is a thick plastic exudation on the surface of the pleura. If we wait for the lung to become compressed and the exudate to become organized, we will have a hopelessly crippled lung. The argument has been advanced that if we aspirate early the inflamed surface will immediately pour out a fresh supply, and so no good will be accomplished. But even if this does occur, we can aspirate again; it will not take a great amount of food and drink to furnish a fresh supply of serum. We see too many sunken chests that are the results of too long waiting, not to feel convinced that an early interference is the wisest course to pursue. It is not necessary to remove all the fluids—indeed, the removal of a moderately small amount will often relieve the pressure and start the process of absorption, which will then go on unaided. As soon as the patient begins to feel a sense of tightness around the chest, it is time to stop. If the physical signs are sufficient to convince us that fluid is present, one negative puncture should not discourage us; the needle may have simply penetrated an adhesion on one of the numerous trabeculæ present, and then of course no fluid would be obtained. If the needle and skin and doctors are clean there is no danger in making enough punctures to give absolute certainty.

Absorbents, as iodides, etc., are of little avail, though they amuse the patient while we are waiting to see what nature will do. Cathartics and diuretics will accomplish much if liquids are kept from the patient; otherwise they will not do much good. The writer has seen large effusions rapidly absorbed in this manner, which as rapidly reappeared when the free use of water was al-

lowed, to again disappear on placing the patient again on the dry diet. This combination of drugs and diet will do more than any form of medication; but if the effusion persists or the dyspnea is urgent, nothing is to be gained by waiting, while much may be lost. It is well, if the case be not urgent, to wait and see what nature will accomplish, but we should not confound natural recuperation with the strain of natural endurance, which is liable at any moment to result in collapse. We do not carry out this policy in other cases. In obstetrics we do not wait so long before we use version or the forceps; dentistry we pull or fill the offending tooth; in abdominal work we perform laparotomy, even for exploration; but in thoracic effusion too many will sit down, after demonstrating the presence of a painful of water and wait, like Mr. Micawber, for something to turn up. If the aspirator shows pus instead of serum, the question arises: Should we make a free incision, or wait? The decision then depends much on the condition of the patient and the character of the pus. If the pus is septic and the temperature high, the sooner the whole cavity is emptied and drained, the better; if not, there is no harm in waiting a moderate time to see if the pus again forms.

Years ago we used to hear a great deal about serous effusions becoming purulent after repeated aspirations, and the supposition was advanced that all or most effusions were serous in the beginning; but since the days of asepsis we hear very little of changes of that sort.

Respiratory Interchange During Typhoid Fever.

A. A. E., in The Philadelphia Polyclinic.

As a result of a study of the respiratory chemistry in health and during typhoid fever, Robin and Binet (*Archieves generales de Medicine*,) have found that during the attack of fever the production of carbon dioxide falls below the normal, while the total consumption of oxygen is only slightly diminished, approximating the normal. The absorption of oxygen by the tissue is increased, while the respiratory quotient is diminished. These modifications are increased in proportion to the severity of the disease. During convalescence, the production of carbon dioxid is increased, while the total absorption of oxygen remains normal or is slightly increased, and the absorption of oxygen by the tissues is diminished. The respiratory interchange is increased, but disordered. The respiratory interchange increases as the temperature declines, and *vice versa*. These data form part of a well-defined type having the significance of a syndrome that may be utilized for diagnostic purposes. The gravity of the disease, or a transient aggravation of the condition of the patient, is indicated by a diminution in the respiratory interchange. From this fact, and from the further fact that in convalescence or from transitory amelioration the interchange increases, certain useful prognostic indications may be derived. There is an accord between the diminution in nitrogenous oxidation and the lessening of respiratory interchange. The coefficient of nitrogenous elimination, almost normal at the onset, declines sensibly with the first signs of defervescene. The diminution in the respiratory interchange is attended with a diminution in the oxidation of the ternary principles of the organism, as indicated, among other things, by an increase in the urine of ternary principles incompletely oxidized. The propositions enumerated are capable of direct therapeutic application. They indicate the employment during an attack of typhoid fever of remedies capable of increasing oxidation, and the avoidance of those that tend to depress that process.

The Commencement of Diabetes Mellitus.

Medical Review.

Loeb (*Centralb. fur. innere. Medicin*) points out that little is known with respect to the earliest stage of diabetes. When the patient first seeks medical advice, it is generally on account of some definite symptoms,

and the urine is then generally found to contain a large amount of sugar (1 per cent. or more). The patient often states that he has suffered from the symptom of the disease for a certain definite period only. But the author records cases which show that these statements are often unreliable, and that the disease may first begin as a slight temporary glycosuria. In one of Leob's cases the urine contained 53 per cent. of sugar, the specific gravity was 1038, and there was a history of thirst of only fourteen days' duration. But the author happened to have examined the urine two years previously whilst the patient was suffering from an attack of inter-costal neuralgia. At the time 0.25 per cent. of sugar was present, but this had disappeared at the end of nine months. Hence long before the well-marked symptoms of diabetes had developed, there was a diminished power of utilizing carbohydrates in the system, and a slight temporary glycosuria as a result. In a second case of biabetes the urine contained 7.9 per cent. of sugar, and had a specific gravity of 1042. The patient stated definitely that symptoms of the disease had been present for four weeks only. But the author happened to have made an examination of urine five months previously, and at that time had found traces of sugar present. In a third case of diabetes the urine contained 4 per cent. of sugar. The author had found traces of sugar in the urine two years and a quarter previously. In a fourth case, for four years and a quarter the author had found trace of sugar in the urine from time to time. On one occasion the sugar excretions reached 0.38 per cent. The author concludes that in a great number of cases of diabetes, for a long period—often for years—before a large quantity is excreted, and before the characteristic symptoms of the disease appear, small quantities of sugar are excreted in the urine temporarily. During this period the patients are quite well and have no cause to consult a medical man, the opportunity of detecting this slight and temporary glycosuria seldom occurs. The author, of course, admits that there are cases which are very acute, cases in which there are a large quantity of sugar is found in the urine from the first. The author thinks that the temporary occurrence of a small quantity of sugar in the urine ought not to be regarded lightly. The cases above recorded show that sometimes it is followed by severe diabetes. On the other hand, some of the cases recover completely, and the author adds an example of this—a case of slight and temporary glycosuria—which he has followed for four years and a half, and which has finally ended in recovery.

Chlorate of Sodium in the Treatment of the Uterus.

British Medical Journal.

E. Duvrac, in a thesis fully analyzed in *La Semaine Medicale*, describes a method first used by L. Boucher, of Rouen, as a palliative of uterine cancer, with good results. It consists of the internal administration of chlorate of sodium in the manner in which Brissaud employs that drug in the treatment of cancer of the stomach, combined with the local use of the same substance as a dressing at the neck of the uterus. Internally it is given as follows:

℞ Chlorate of sodium, 5 drachms;
Syrup of orange flower, 8 drachms;
Distilled water, 3 ounces.

Mix. Two to eight tablespoonfuls to be taken daily.

It is well to make the patient begin with two tablespoonfuls a day, and to increase the dose rapidly up to a total amount of 128 grains of chlorate of sodium in twenty-four hours. For local application the following powder is used:

℞ Chlorate of sodium,
Subnitrate of bismuth, of each, 2½ dr.;
Iodoform, 1 drachm.

Mix.

A small quantity of this is applied on a tampon to the cervix. Strips six inches wide and two inches long of sterilized tarletan, impregnated with 1 part of iodoform, 20 parts of chlorate of sodium, and 20 parts of glycerine, may also be used. These are

squeezed out, then cut into pads about four inches in length, and tied around the middle with a silk thread, with which the tampon can be removed from the vagina; each of these pads contain about fifteen grains of chlorate of sodium If symptoms of iodoform poisoning occur, tampons of salolized cotton, steeped at the time of dressing in a twenty per cent. watery solution of chlorate of sodium, should be substituted for those described. Lastly, a vaginal injection of a quart of boiled water, holding in solution 150 grains of chlorate of sodium, should be given every day.

Under the influence of this treatment, metrorrhagia and fetid discharge diminish and almost completely disappear; the pain ceases, so that morphine injections, which were previously necessary, can be dispensed with; the puffiness of the cervix diminishes, the ulcers cicatrize, appetite and digestion are restored, and the general condition improves. The effect of the treatment, however, is purely palliative, for the state of things becomes as bad as before if the dressings are discontinued, and the disease goes on unchecked in the deep parts which are not reached by the chlorate of sodium. Nevertheless, the method gives great relief and prolongs life. Thus, in the first case treated in the way described by Boucher, in which inoperable cancer of the uterus, which had already invaded the pouch of Douglas, coexisted with carcinoma of the stomach, the patient was kept alive in a fairly comfortable condition for three years.

Transfusion, Infusion and Auto-Transfusion.

Dr. Schachner (*American Practitioner and News*) gives the following as his conclusions:

1. In enormous hemorrhages the resulting dangers are more frequently due to the reduced intravascular pressure than to the actual loss of blood.

2. In view of this the indications point more decidedly toward infusion than transfusion.

3. The transfusion has not received the attention which its merits justify.

4. In transfusion we possess a measure which in the severest hemorrhages is the only agent of restoring the vital functions.

5. The indications for transfusion include any condition which reduces the total quantity of blood to a fatal degree, or which alters the character of the blood to such an extent as to render it incapable of carrying on life.

6. When the transfusion is performed for the relief of a poisoned condition of the blood, it should be preceded by venesection.

7. Centripetal is to be preferred to centrifugal transfusion.

8 In centripetal transfusion the injection should be made with a slow, steady stream, carefully exercising no undue force.

9. In withdrawing the blood from the donor the veins afford an easier, safer and better source than the arteries.

10. Indirect transfusion with defibrinated blood is safer than direct transfusion with non-defibrinated blood.

11. In alarming hemorrhages infusion should be performed before transfusion; should, however, the improvement be transient in its nature, the infusion must be supplemented with transfusion.

12. In addition to hemorrhage, the indications for infusion include any pathological state attended by a feeble pulse which is dependent upon relaxed condition and a diminished intravascular blood pressure, namely, shock.

13. Restoring the tone of the circulation by infusion is not wholly dependent upon the increase of the intravascular pressure, but is in part due to the stimulating influence which salt solution has upon the heart.

14. In performing transfusion or infusion after an enormous hemorrhage, the use of an anæsthetic is not only unnecessary but absolutely dangerous.

15. In the autotransfusion we have a valuable measure for combating shock and preventing accidents in anæmic subjects during chloroform narcosis.

Giant Cells and Their Mode of Formation.

Medical Record.

Dr. Charles A. Valadier exhibited under the microscope a section from a giant cell sarcoma of the tibia. It had been taken from one of the specimens in the labratory of the College of Physicians and Surgeons, and was presented because it exhibited some interesting features of giant cells. In some places these giant cells seemed to show protoplasmic processes, and at other places retractions of the protoplasmic mass looking like pseudostomata. He had concluded that they were in the act of embodying some of the surrounding sarcoma, and further study of the specimen seemed to confirm his view. On looking up the literature, he found that the question of the origin of the giant cells and their significance in a tumor were much disputed. The fact of phagocytic action was mentioned by one or two observers, but more especially in regard to foreign particles rather than micro-organisms. Two interesting experiments were mentioned in Virchow's *Archiv*, of giant cells found not only in tumors, but also in normal granulation tissue in wounds. They had been produced experimentally by placing small pieces of cotton, catgut, and hair under the skin of animals. After a short time, the granulation tissue which grew around these exhibited giant cells, and these cells had such phagocytic action that they not only embodied in their mass certain portions of hair but also the pigment of the hair. The other experiment consisted in placing two small pieces of cover glass with a capillary space between them, in the omentum of a frog. Here giant cells also developed. The author believed that the inflammatory process set up by these foreign bodies drew to the parts leucocytes, and the welding of two or more of these leucocytes caused the development of giant cells possessing phagocytic action. Dr. Valadier said that he had seen these giant cells in epitheliomata and sarcomata. Their presence in sarcomata had been explained as having been occasioned by the osteoclast, but on this point there was much difference of opinion. He would like to raise these questions, viz: Are these cells, as shown in the specimen, due to irritation within the tumor, as, for instance, from the presence of pigment? May not the giant cells obtain their nuclei from the phagocytic action of these pseudopods?

The Present Prevalence of Lagrippe.

Medical Reprints.

"The following suggestions will be of value at this season. The pains of acute influenza are something indescribable, especially when associated with a high temperature. To relieve these with some preparation of opium is only to increase the cerebral congestion and aggravate the extreme prostration. Sharp, darting pains are no more severe than are the dull, heavy and presistent pains in the muscles and bones which so often obtain in this disease. Clinical reports verify the value of antikamnia in controlling the neuralgic and muscular pains, as well as the fever. In fact, antikamnia may now be called the *sine qua non* in the treatment of this disease and its troublesome sequelæ.

"It seems hardly necessary to indicate the conditions, when the use of two such well-known drugs as 'antikamnia and quinine' will be serviceable, nor the advisability of always exhibiting 'antikamnia and codeine' in the treatment of the accompanying neurosis of the larynx, the irritable cough and bronchial affections. Relapses appear to be very common, and when they occur the manifestations are of a more severe nature than in the initial attack. Here the complications of a rheumatic type are commonly met and 'antikamnia and salol' will be found beneficial. Antikamnia may be obtained pure, also in combination with the above drugs in tablet form.

"Tablets mark the most approved form of medication, especially as they insure accuracy of dosage and protection against substitution. To secure celerity of effect, always instruct that tablets be crushed before taking."